

DUNE Physics WG: Status

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DUNE Collaboration Phone Meeting
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Preliminaries

- **Introductions: PWG Coordinator**

- About JU

- At Indiana U. since 2003; started with LBNE in 2008
 - LBNE roles: DAQ subsystem mgr ('11-'13) & PWG Coordinator ('13-'14)
 - Also work on scint. photon detection effort at IU, led by S. Mufson
 - Previous experiments:
 - Rare K decay in the 1980's (BNL E791)
 - Tau, charm, B physics 1990-2004 (CLEO)
 - Neutrinos: MINOS (1999-2013), now on NOvA (less) and DUNE (more)

- About the position

- One-year term: Deputy rotates in after that.
 - Expect this year's activities to be tightly coupled with Task Forces

Preliminaries

- **Charge to Physics Working Groups**

- 1) **Extend our understanding of scientific capabilities of DUNE with the detector and beam line configurations being developed.**

- “Extend” → at progressively more realistic levels, driving toward full sim+reco.
 → close attention to tools, analysis strategies, systematics, backgrounds
 → attention to the evolving experimental landscape

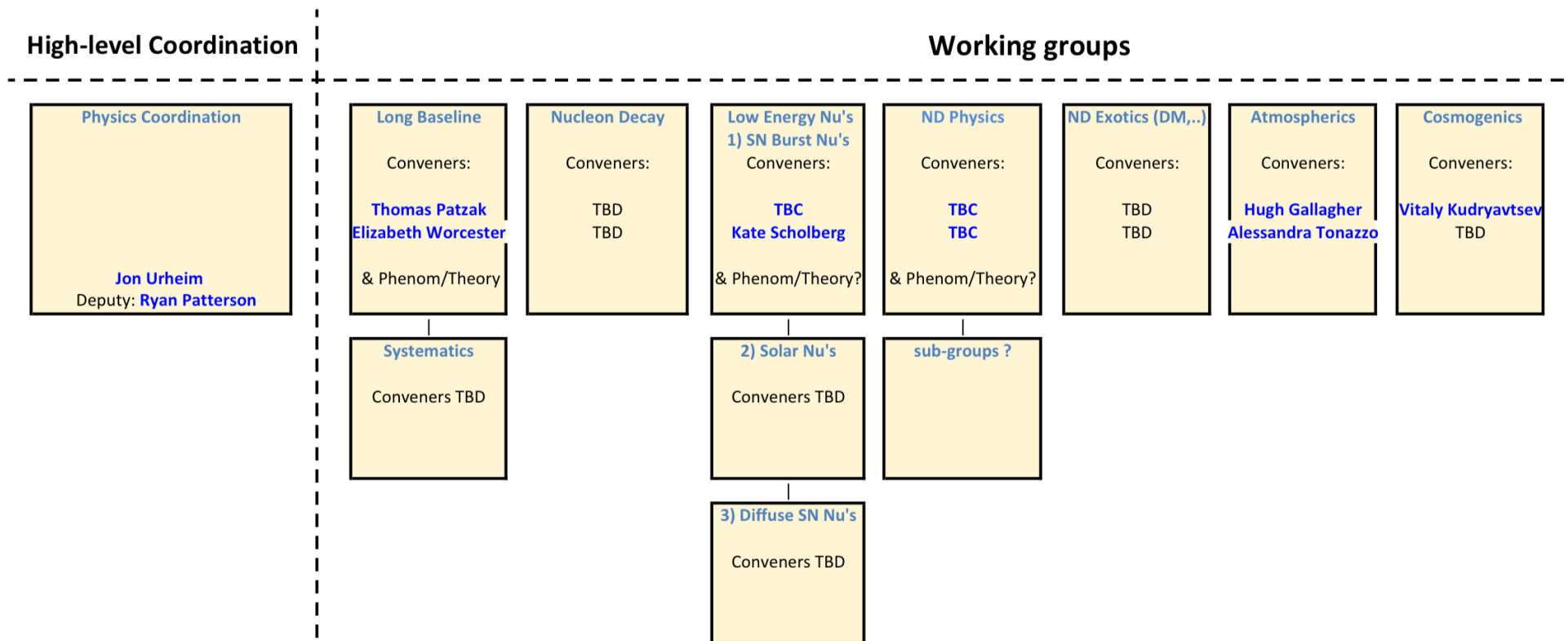
- 2) **Further develop the scope and strength of the physics program for DUNE through exploration of new ideas, with inputs from the experimental and theoretical communities at large**

- **Notes:**

- Executing charge is essential for articulating our physics case!!
- Note that emphasis is on physics!
- Not present in charge: beam/detector optimization → Task Forces!
 - more on this later...

Working Group Structure & Confirmed Conveners

- Provisionally, & based on structure shown by Mark at the 7/31 phone mtg:



- Notes:
- 1) have started to talk to people for ND exotics & cosmogenics
 - 2) sub-group structure in flux
 - 3) open questions: *e.g.*, where do astrophysical nu's, monopoles, etc. go?

Interaction With Task Forces

- Based on early discussions with Lisa (FD) and Steve (ND), so far..

1) TF's have aggressive, multi-threaded charges → need resources

- Resources will come from the WG's
- Physics WG's will play an important role:
 - Exercise tools to quantify impact on physics sensitivities of different experimental configurations
- Expect this work will dovetail with the work needed to carry out our charge

2) How will the interaction take place in a practical sense?

- Will be determined by initial interactions to take place at the convener level
- ...also, expect discussions in working group sessions at Sept 2-5 Collab. Mtg.

Collaboration meeting

- **PWG meetings during Wed/Thu Parallel Sessions:**

- 1) Currently scheduled:**

- Long Baseline WG (2), Low-E Nu's (1), Nucleon Decay/Atmospheric nu's (1), ND Physics (1), ND Exotics (1). See Agenda on Indico for details.

- 2) Flavor of these sessions will vary from WG to WG**

- Don't want to rehash status on topics with no new progress
 - But some groups may actually have recent work to be reported
 - Do want some discussion of strategy / priorities for WG's
 - For this reason also want discussion on Task Force needs & how to get going
 - Do want to give opportunity for recruitment
 - Conveners need to think of concrete ways to draw in effort:
 - *i.e.*, what studies are needed, and how to ramp up new WG members on them